

Soil Moisture Meters

Soil Moisture Meter



The **Moisture Meter** gives you the moisture content of your compost pile or soil sample by means of a sensor at the bottom of the probe. The probe is sensitive only at the tip. Calibrate the instrument by inserting the tip into a saturated sample of compost or soil and setting the needle on scale to 10. Then insert your Moisture Meter into the medium at the depth you want to measure and a relative moisture content will be derived instantly. The meter is sensitive to changing salt content and can be used to track leachate as well as give you moisture content. Used by composters, farmers, and nurseries across country.

REO-MM9
Moisture Meter 9" Stem

REO-MM24
Moisture Meter 24" Stem

REO-MM36
Moisture Meter 36" Stem

REO-MM48
Moisture Meter 48" Stem

REO-MM60
Moisture Meter 60" Stem

M-300 Moisture Meter

The RF capacitance sensor at the probe's tip instantly determines the amount of air and water in the soil, thus giving a direct readout in percent of saturation. These probes are well known for their use in irrigation timing & audit programs & determining the available water for deficit irrigation.



Benefits include:

- Finding plugged emitters
- Bad sprinkler heads
- Pressure problems
- Wind effects
- Elevation effects on water distribution

Probe Length	30 inches
Moisture Range	0-100%
Meter Accuracy	± 1.5%
Warranty	90 days

AQ-M-300
Moisture Meter



T-300 Temperature & Moisture Meter

Most popular where composting & early planting are important, these meters add the versatility of an electronic sensor which can measure to over 180 degrees. Keeping temperature & moisture in the right range is critical to rapid decomposition as well as the prevention of anaerobic activity & in the worst case obnoxious smells.

Probe Length	30 inches
Temp. Range	40° - 150°F 4.44° - 65.55°C
Moisture Range	0-100%
Meter Accuracy	± 1.5%
Warranty	90 days

The T-300 can be used to optimize germination time & protect against threat of frost. Additionally it can help prevent chemical & fertilizer application from being ineffective due to incorrect soil temperature.

AQ-T-300
Moisture & Temperature Meter



EC-300 Moisture, Temperature & Salinity Meter

These meters add a salinity tracking inductance sensor to the moisture and temperature. Together these help prevent yield loss and poor plant quality. Readings taken in the soil root zone can help track the salt accumulation and determine the need for and effectiveness of leaching. This is extremely important to drip or low flow where leaching is not part of the natural process. Excessive salt buildup will lead to poor quality, lower yield and eventual plant death.

Probe Length	30 inches
Temp. Range	40° - 150°F 4.44° - 65.55°C
Salinity Range	Up to 2000 µs (microSiemens)
Moisture Range	0-100%
Meter Accuracy	± 1.5%
Warranty	90 days

AQ-EC-300
Moisture, Temperature & Salinity Meter



KS-D1 Digital Soil Moisture Tester

Specifications:
 Range: 0.1 to 15 Bars Tension
 Display: 3 1/2 " Digital LCD with 0-100 Arbitrary Scale
 Size: 2 3/4" x 4 3/4" x 1 3/4"
 Weight: 8 oz.
 Battery: 1-9V
 Carrying Case: included

The **KS-D1 Digital Soil Moisture Tester**, used with the GB-1 Gypsum Soil Blocks, make up a valuable system to monitor the soil moisture available to the plants. This system eliminates guesswork so that irrigation can be effectively scheduled according to plants' requirements. The KS-D1, housed in a rugged ABS plastic case, features reliable temperature stable semi-conductor technology with internal battery and calibration checks for users' full confidence. A membrane switch panel provides positive, tactile feel. Spring-loaded binding posts allow for positive contact with the blocks' leads.

- DEL-KS-D1**
Moisture Meter 0.1 - 15 bars

- DEL-GB-1**
Standard 6 Foot Lead Wires

- DEL-GB-2**
25ft Lead Wires

Fast Response Thermometer Type "A"

Sturdy 3/8" diameter stem for extra durability
 Easy-to-read 3" diameter dial
 Very accurate (+1% of scale)
 °F, °C, or Dual scales available



The **Fast Response Thermometer** has all of the assets the Heavy-Duty Thermometer has, however it is stronger and quicker. The extra sensitive tip gives an accurate temperature reading twice as fast as the Heavy-Duty Probe. The stem is now reinforced with 3/8" stainless steel, providing you with a more durable instrument so that you do not need to replace them as often.

- REO-A24FR**
24" Stem

- REO-A36FR**
36" Stem

- REO-A48FR**
48" Stem

- REO-A60FR**
60" Stem

- REO-A72FR**
72" Stem

Heavy Duty Thermometer Type "A"



Rugged all stainless construction
 Hermetically sealed-will not fog
 Unbreakable plastic crystal
 Pointed stem for easy insertion
 Easy-to-read 3" diameter dial
 Very accurate (+1% of scale)
 °F, °C, or Dual scales available
 Regular 1/4" diameter stem or Heavy Duty 5/16" diameter stem available

The **Heavy Duty Thermometer** is ideally suited for monitoring interior temperatures of compost piles and windrows. The clear, easy-to-read dial, with the pointer directly driven by the sensitive bi-metal helix in the bottom of the stem, gives an accurate reading every time. Used by composters everywhere for waste disposal, recycling, mushroom growing, etc.

- REO-A24PF**
24" Stem

- REO-A36PF**
36" Stem

- REO-A48PF**
48" Stem

- REO-A60PF**
60" Stem

- REO-A72PF**
72" Stem

Probe Guard & Probe Handle

Accessories to be used with
 Type "A" Thermometers (1/4" or 5/16" Stem)



Probe Guard

Probe Handle

- REO-FM24-16**
24" Stem

- REO-FM36-16**
36" Stem

- REO-FM48-16**
48" Stem

- REO-FM60-16**
60" Stem

- REO-FM72-16**
72" Stem

- REO-FM-0**
Probe Handle

(for 1/4" Stem replace "-16" with "-4")

Soil Thermometer

The HA-145 series was designed to measure soil temperature quickly and accurately up to depths of 12 inches. Equipped with a calibration check feature, the user can be assured that each reading is accurate.



Specifications	HA-145-00	HA-145-01	HA-145-20	HA-145-30
Range:	-50.0 - 220°C	-58.0 - 428.0°F	-50.0 - 220°C	-58.0 - 428.0°F
Resolution:	0.1°C (-50.0 - 199.9°C) 1°C (200 - 220°C)	0.1°F (-58.0 - 199.9°F) 1°F (200 - 428°F)	0.1°C (-50.0 - 199.9°C) 1°C (200 - 220°C)	0.1°F (-58.0 - 199.9°F) 1°F (200 - 428°F)
Accuracy:	±0.3°C (-20 - 90°C) ±0.4% F.S. (outside)	±0.6°F (-4 - 194°F) ±0.4% F.S. (outside)	±0.3°C (-20 - 90°C) ±0.4% F.S. (outside)	±0.6°F (-4 - 194°F) ±0.4% F.S. (outside)
Probe:	stainless steel 125 mm x dia 5 mm (4.9 x dia 0.2")		stainless steel 300 mm x dia 5 mm (11.8 x dia 0.2")	
Battery Type / Life:	1 x 1.5V AAA / approx. 10000 hours of continuous use; auto-off after 8 minutes of non-use			
Environment:	-10 to 50°C (14 - 122°F); RH max 95%			
Dimensions:	692 x 165 x 38 mm		692 x 340 x 38 mm	
Weight:	65 g (2.3 oz.)		80 g (2.8 oz.)	

HA-145-00
Thermometer 5" Probe -50 to 220°C

HA-145-01
Thermometer 5" Probe -58 to 428°F

HA-145-20
Thermometer 12" Probe -50 to 220°C

HA-145-30
Thermometer 12" Probe -58 to 428°F

All models of the HA-145 series are supplied complete with battery and instructions.

HA-99556-00 & HA-99556-01 Thermometers

2 in 1 infrared/penetration thermometer. The new dual purpose HA-99556-00 is ideal for checking temperatures everywhere from the greenhouse to the field. Spot check with the infrared probe and get a closer look with the thermistor thermometer. Comes complete with probe and wrist strap.



Specifications	HA-99556-00	HA-99556-01
Range:	IR PROBE -10 - 300°C -40 - 150°C	14 - 572°F -40 - 302°F
Resolution:	IR PROBE 1°C 0.1°C	1°F 1°F
Accuracy:	IR PROBE ±2% reading or ±2°C ±0.5°C (-20 - 120°C) & ±0.5°C+1% read. (out.)	±2% reading or 3°F ±1°F (0 - 250°F) & ±1°F+1% read. (out.)
Response Time:	1 second	
Optic IR Coefficient:	3 : 1 (ratio of distance to diameter of target)	
MIN Distance:	30 mm (1.2")	
T° Probe:	HA-765PW (included)	
Battery:	1 x 9V	
Dimensions:	143 x 80 x 38 mm (5.6 x 3.1 x 1.5")	
Weight:	320 g (11.3 oz)	

HA-99556-00
Thermometer IR range from -10 to 300°C
Meter with IR sensor and HA-765W probe with -40 to 150°C range

HA-99556-01
Thermometer IR range from 14 to 572°F
Meter with IR sensor and HA-765W probe with -40 to 150°C range



LeadCheck® Soil

LeadCheck® Soil provides a simple, inexpensive way to test for lead in soil and other difficult to test solid materials. After collecting the soil, extract the lead with the reagent provided then test the extraction liquid for lead content. In the vast majority of test situations results are obtained in less than 10 minutes. When detecting low levels of lead the results may take longer to develop. Each kit contains 6 test kits.

With minor changes in reagents, the test can be used to detect mercury and cadmium in soil. Call for additional information.

Sensitivity: 400 ppm
Stability: Indefinite stability.
Interferences: As provided interferences are minimized.

Please contact us for more information.

HY-ST4TS6
LeadCheck® Soil - 6 test kit (400 ppm sensitivity)

Preparing a Soil Sample for analysis

There are several methods available to obtain a soil sample for measurement. The objective is to find a method you can use that will give you consistent results. Below we have indicated one method commonly used in agriculture.

In all cases, the goal is to prepare a sample which is as clean as possible. Any coloration or turbidity in the samples will adversely affect the ability of the unit to give an accurate reading.

Step 1. Take a sample of soil and mix it with distilled water, 85 g (3 oz) of soil with 170 g (6 oz) of distilled water. Then let the mixture stand for approximately 30 minutes in order to stabilize.

Step 2. Filter the solution with a medium filter (C 0002-12.5) through a funnel into a clean cup. If the filtrate is not clear, run through a clean filter again until you have a translucent solution.

Step 3. If your solution is not translucent, use the Activated Charcoal included in the kit, mix with the solution, and filter one more time. This should give you a translucent liquid, and you will be ready to begin your analysis procedures. Ideally, you should filter enough of the solution to have an end result of 50 ml of liquid.

Step 4. Follow the instructions in the operators manual provided with your meter to mix and measure your samples to determine the analysis of the parameter you are measuring.

Guide for Direct Soil Measurement



1) When checking direct soil pH and conductivity, always remember you will be making a reference between TRUE and SOIL reference values.

2) Start by gathering samples of the soil medium and draw a reference table to record your data.

3) Prepare a dilute solution with each sample (example: 2 parts distilled water for 1 part soil).

4) Take the measurements of the dilute solutions with the HI 99121 or the HI 993310, following the instructions in the operators manual, and record this data on the first line of the reference table for either pH or conductivity. Your local agronomist or crop advisor will help you determine if these values are correct.

	pH		
Dilute Solution	6.5	6.4	6.5
Soil			

	EC		
Dilute Solution	2.2	2.3	2.4
Soil			

5) The next step is to take the measurements directly in the soil, again, following the instructions from the operators manual.

Note : these readings will be different from the dilute solution readings due to the physical properties of the two materials and the effects on conductivity.



6) Record your measurements on the second line of the pH or conductivity reference table.

	pH		
Dilute Solution	6.5	6.4	6.5
Soil	5.9	5.8	5.9

7) During the measurements in soil, always use consistent and repeatable measuring techniques for analysis. Example :

- always test at the same time interval after irrigation;
- use same depth in each pot or bag;
- use same distance and depth from drip emitter;
- same medium types.

8) When the chart is complete, you will compare the true and soil reference values. If there are no large differences between these two values, you are ready to begin measuring directly in the soil using only the soil reference values as a target.



Kit for Direct Soil pH Measurement with Special Electrode

The HA-99121 kit has been designed to address the question of correct and rapid measurement of pH directly in soil. Every item in this kit has been made to facilitate measurements in the field without compromising accuracy.

With HA-99121 you can test the pH of soil directly or after preparation of a diluted sample. In order to measure the pH directly, the kit includes a plastic auger to perforate the ground.

HA-99121

HA-99121 is supplied complete with HA 1292D pH electrode, ground auger, HA 7051M soil preparation solution, pH 4 & pH 7 buffer sachets, HA-700663 and HA-700664 electrode cleaning solutions, batteries, rugged carrying case & instructions.

HA-7004L

pH 4.01 buffer solution 500ml

HA-7007L

pH 7.01 buffer solution 500ml

HA-7051M

Soil preparation solution 230ml

HA-710007

Shock rubber boot, blue

Specifications

HA-99121

Range:	pH	-2.00 - 16.00 pH
	Temperature	-5.0 - 105.0°C / 23.0 to 221.0°F
Resolution:	pH	0.01 pH
	Temperature	0.1°C / 0.1°F
Accuracy (@20°C):	pH	±0.02 pH
	Temperature	±0.5°C (up - 60°C), ±1°C (outside)
		±1.0°F (up - 140°F), ±2°F (outside)
pH Calibration:	automatic, 1 or 2 point with 2 sets of memorized buffers (pH 4.01/7.01/10.01 or 4.01/6.86/9.18)	
Temp. Comp. aut.:	-5 - 105°C (23 - 221°F)	
pH Electrode:	HA-1292D, refillable, glass body, with internal temperature sensor, DIN connector and 1 m cable (included)	
Battery Type/Life:	3 x 1.5V AA / approx. 1500 hours of continuous use; auto-off after 8 min. of non-use	
Environment:	0 - 50°C (32 to 122°F); RH max 100%	
Dimensions/Weight:	150 x 80 x 36 mm (5.9 x 3.1 x 1.4") / 210 g (7.4 oz)	

**HA-993310**

HA-993310 is supplied complete with HA-76304 EC probe for solutions, HA-76305 stainless steel probe for direct soil measurements, HA-7051M soil preparation solution, HA-721319 ground auger, battery, rugged carrying case & instructions.

HA-7030L

12880 $\mu\text{S}/\text{cm}$ calibration solution, 500 ml bottle

HA-7031L

1413 $\mu\text{S}/\text{cm}$ calibration solution, 500 ml bottle

Dual-purpose, EC meter for direct measurement in soil and liquids the HA-993310

Since **EC (Electroconductivity)** is such an effective indicator of nutrient concentration in soil, irrigation water and fertilizer mixes, the HA-993310 was developed. Now it is possible to use one instrument to accurately and quickly measure EC in many places where the fertilizer is found, such as in the irrigation water and directly in the soil. This meter is easy to operate and gives fast, accurate measurements. Also included in the meter is the ability to measure salt activity. Comes complete with HA-76304 and HA-76305 interchangeable probes.

Specifications	HA-993310
Range:	0.00 - 19.99 mS/cm; 0.00 - 1.00 g/l of salt activity
Resolution:	0.01 mS/cm; 0.01 g/l of salt activity
Accuracy (@20°C):	$\pm 2\%$ F.S. (from 0 - 15.00 mS/cm, excl. probe error)
Calibration:	manual, 1 point
Temp. Comp.:	Automatic 0 to 50°C (32 - 122°F), $\beta=2\%/^{\circ}\text{C}$
Battery Type/Life:	1 x 9V / approx. 100 hours of continuous use
Dimensions:	185 x 82 x 52 mm (7.3 x 3.2 x 2.0")
Weight:	275 g (9.7 oz)



Electronic Soil Lab

The **SCL-12 Electronic Soil Lab** is designed to provide the landowner, consultant, or fertilizer specialist with a method for achieving immediate and economical soil analyses in the field without sacrificing accuracy. The SCL-12 soil lab is a self-contained, electronic soil analysis laboratory that provides accurate answers anywhere for fifteen soil factors, including available forms of macronutrients and critical micronutrients

The Smart 2 Colorimeter instantly analyzes color reactions developed in nutrient tests and gives a Percent Transmittance readout. By using Transmittance readings, broad test ranges can be read with maximum sensitivity and without need for visual color comparison. Calibration charts convert the Percent Transmittance readings to parts per million (ppm) or pounds per acre (lbs/acre) for each nutrient - no further calculations are necessary.

The simplified test procedures provide at least 20 tests for each soil nutrient. Each accurately standardized system is furnished in an individual plastic module for quick distinction. All tests are performed in minutes on easy-to-prepare soil extracts, based on Mehlich I extraction.

Colorimeter Tests	Method	Range	# of Tests
Nitrate Nitrogen*	Cadmium Reduction	0-150 lbs/acre	20
Nitrite Nitrogen	Diazotization	0-70 lbs/acre	20
Ammonia Nitrogen*	Nesslerization	0-150 lbs/acre	50
Phosphorus*	Ascorbic Acid Reduction	0-98 lbs/acre	50
Potassium*	Tetraphenyl-boron	0-500 lbs/acre	100
Sulfur	Barium Chloride	0-167 ppm	50
Copper	Diethyl-di-thiocarbamate	0-30 ppm	100
Iron	Bipyridal	0-30 ppm	50
Manganese	Periodate	0-75 ppm	50
Zinc	Zincon	0-15 ppm	50

Direct Reading Titrator	Tests	Range	# of Tests
Calcium	0-4000 lbs/acre	50	
Magnesium	0-2400 lbs/acre	50	
Chlorides	0-1000 lbs/acre	50	

Battery-Powered Meters	Range	# of Tests
pH 5	pH 0-14	
TDS 6	0-99.9 ppm	
	100-999 ppm	
	1.00-9.99 ppt	

Critical soil pH measurements are performed quickly and reliably with a battery-powered pH 5 meter. The meter measures the pH of a one-to-one solution of soil and distilled water over the range of 0-14 pH units to a sensitivity of 0.01 pH. Soluble Salt levels in soils and irrigation waters are monitored accurately with a TDS 6 meter measuring Dissolved Salts from 0-999+ ppm.

LA-1985-04

Smart 2 Electronic Soil Lab Model SCL-12, 110V

LA-1985-04-EX2

Smart 2 Electronic Soil Lab Model SCL-12, 220V

LA-R-1985-04

Reagent Refill

LA-1988-02

Electronic Soil Lab Model SCL-12 without meters

LA-R-1988-02

Reagent Refill